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Claims

1. A microwave oven having wall means defining an oven cavity to receive food to be cooked, the wall means having a launch wall with an aperture therein; a launch box mounted on the external side of the launch wall so as to cover the aperture; two, three or four sides of the box being in respective communication with two, three or four waveguides each fed by a respective magnetron so that there are two, three or four magnetrons all operative to supply microwave energy through the common launch box and thence into the oven cavity.

2. A microwave oven according to claim 1, in which the launch box houses a rotatable phase modulator designed so that the impedance seen by each magnetron is different at each rotatable position of the modulator so that at no time is the same frequency generated by more than one magnetron.

3. A microwave oven according to claim 2, in which the rotatable phase modulator comprises a bladed disc.

4. A microwave oven according to any of the preceding claims, in which the launch box is of cuboid shape to three side walls of which are respectively fitted three, waveguides respectively fed by three magnetrons.

5. A microwave oven according to claim 4, in which the launch box has two opposite side walls and an intermediate side wall, and in which two of the three waveguides are attached to opposite side walls of the box and have a longer length than the third waveguide which is attached to the intermediate wall of the box.

6. A microwave oven according to claim 5. in which the pair of longer waveguides have an effective length corresponding to one wavelength at the operating frequency of the magnetron and the shorter waveguide has an effective length corresponding to one half wavelength at this frequency.

7. A microwave oven according to any of the preceding claims, in which a choke assembly is attached to the launch box.

8. A microwave oven according to claim 7, in which the choke assembly includes a fixed structure having two annular members attached together at their rims and being dished so as to enclose a space accommodating a fixed attenuator tube and a fixed half wavelength plate, with one of the two annular members being attached to the launch box so that this annular member is in registration with the aperture in the launch wall.

9. A microwave oven according to claim 8, when appended to claim 2 in which, the choke assembly has a rotatable part which includes a rotatable choke plate spaced from the half wavelength plate and mounted on the shaft of an electric motor which drives not only the choke plate but also the rotatable phase modulator housed in the launch box.

10. A microwave oven according to claim 8, in which the drive shaft extends from the motors, through the choke plate and thence through the stationary half wavelength plate and the attenuator tube so as to project into the launch box where the phase modulator is attached to the extreme end of the shaft.

11. A microwave oven according to claim 2, in which the phase modular has a planar hub region which occupies a main plane of the modulator and from which project equi-angularly spaced blades each carrying a flange bent so as to project from one side of the main plane of the phase modulator.

12. A microwave oven according to claim 11, in which further flanges project from the other side of the main plane, with the object of providing the phase modulator with a shape which contributes to the establishment of multi-modes in the oven cavity.

13. A microwave oven having wall means defining an oven cavity to receive food to be cooked, the wall means having a launch wall with an aperture therein, launch means for supplying microwave energy to the cavity through the aperture, a match plate mounted in the cavity so as to be spaced a small distance from the launch wall and in registration with the aperture so that the gap defined between the edges of the match plate and the launch plate has at least one hole therein, with the edge of the hole providing a means for coupling microwave energy to resonant modes in the central region of the oven cavity.

14. A microwave oven according to claim 13, in which the or each of the hole is formed in a region of the match plate which region is interposed between the central region of the oven cavity and the central region of the launch box.

15. A microwave oven according to claim 14, in which said region of the match plate is of rectangular shape.

16. A microwave oven according to claim 14 or 15, in which a generally central region of the match plate has four holes, each in the form of a cut out in the match plate, the four cut outs being arranged in a symmetrical two-by-two rectangular array.

17. A microwave oven according to any of claims 13 to 16, in which the or each hole is of a rectangular shape.